

REMARKS

This application has been reviewed in light of the Office Action dated July 16, 2007. Claims 1-43 are pending in the application. By the present amendment, claims 1, 4, 5, 10, 12-15, 18, 20, 21, 25-28 and 31 have been amended. No new matter has been added. The Examiner's reconsideration of the rejection in view of the amendment and the following remarks is respectfully requested.

By the Office Action, the Examiner objected to claims 4 and 20 as including acronyms. The acronyms have been appropriately defined in the claims by amendment. Reconsideration is respectfully requested.

By the Office Action, claims 12 and 25 stand rejected under 35 U.S.C. §112, first paragraph as being non-enabling. The Applicant respectfully disagrees with the rejection. It is believed that sufficient details are given throughout the specification to enable one skilled in the art to make or use the presently claimed invention. However, claims 12 and 25 have been amended in a way believed to overcome the rejection. Reconsideration is respectfully requested.

By the Office Action, claims 31-33, 35, 38 and 41-43 stand rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent Publication No. 2003/0216905 to Chelba et al. (hereinafter Chelba).

Chelba is directed to a speech system that employs a conventional syntactic parse tree structure and inputs semantic information into the parse tree to provide a two-level approach in training the system. The two level approach provides semantic information for

training models. Chelba does not disclose or suggest a universal model that includes both a lexical model and a semantic model. Further, Chelba does not disclose or suggest parse trees including both lexical information and semantic information.

Claim 31 now recites, *inter alia*, a system for speech recognition including a unified language model including a semantic language model and a lexical language model; and a recognition engine configured to find a parse tree to analyze a word group using the lexical model and the semantic model, the parse tree including both lexical information and semantic information wherein the parse tree is selected based on the lexical information and the semantic information which considers tags, labels, and extensions to recognize speech. Claim 31 has been amended to clarify the present invention.

Chelba provides semantic and syntactic information in a language model. The syntactic structured language model is well known. The semantic information is employed to further bound sentence hypotheses in Chelba. Chelba does not provide a unified language model that includes a semantic language model and a lexical language model. In addition, Chelba, does not disclose or suggest parse trees that include both semantic and lexical information, nor is the parse tree selected based on the lexical information and the semantic information which considers tags, labels, and extensions to recognize speech.

The Examiner cites FIG. 11 of Chelba which shows a lexicon 418. Lexicon 418 is for identifying a group of words. There is no other description and nothing to suggest that the lexicon is incorporated in a semantic model to form a unified model. In fact, the SLM 420 of Chelba is shown as a separate unit from lexicon 418.

Further, nowhere in Chelba is it disclosed or suggested that a parse tree include lexical information. There is no parse tree which employs both semantic and lexical information in a unified model. As is known, lexical information is different from syntactical information. For example, lexical rules determine how the symbols of the language can be combined (for example, to form tokens) where syntactic rules are directed to how words can be combined to form a sentence.

Since Chelba fails to teach all of the claimed elements of claim 31, claim 31, as amended, is believed to be in condition for allowance for at least the stated reasons. Claims 32-43 are also believed to be in condition for allowance due at least to there dependency from claim 31. Reconsideration of the rejection is earnestly solicited.

By the Office Action, claims 1, 3, 5, 8-11, 14, 17-19, 21, 24, 27 and 30 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Chelba in view of U.S. Patent Publication No. 2002/0087316 to Lee et al. (hereinafter Lee).

Claim 1 and claim 18 now include, *inter alia*, a method for speech recognition including generating a set of likely hypotheses in recognizing speech; rescoring the likely hypotheses by using semantic content and lexical content by employing a semantic structured language models which combines a semantic language model and a lexical language model; and scoring parse trees to identify a best sentence according to the sentences' parse tree by employing semantic information and lexical information in the parse tree to clarify the recognized speech.

As discussed above, Chelba fails to disclose or suggest both semantic information and lexical information in the parse tree, and fails to disclose or suggest a semantic

structured language model which combines a semantic language model and a lexical language model.

The Examiner stated that Chelba does not disclose or suggest generating a set of likely hypotheses in recognizing speech. Lee has been cited to cure this deficiency. Lee is directed to syntactic system where grammars, semantic, and parts of speech are used to recognize speech. Lee does not provide a unified model (lexical and semantic), or a parse tree/parse tree selection based upon lexical and semantic information, as described above.

Chelba and/or Lee fail to disclose or suggest at least: rescoring the likely hypotheses by using semantic content and lexical content by employing a semantic structured language model which combines a semantic language model and a lexical language model; and scoring parse trees to identify a best sentence according to the sentences' parse tree by employing semantic information and lexical information in the parse tree to clarify the recognized speech. As such, claims 1 and 18 are believed to be in condition for allowance for at least the stated reasons. Claims 2-17 and 19-30 are also believed to be in condition for allowance due at least to their dependencies from claims 1 and 18, respectively.

Reconsideration of the rejection is earnestly solicited.

By the Office Action, claim 2 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Chelba in view of Lee and further in view of U.S. Patent Publication No. 2005/0055199 to Ryzchachkin et al. (hereinafter Ryzchachkin); claims 4, 6-7, 13, 15-16, 20, 22-23, 26 and 28-29 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Chelba in view of Lee and further in view of Ratnaparki in "Learning to Parse Natural Language with Maximum Entropy Models", 1999 (hereinafter Ratnaparki); claims 34, 36-37 and 39-40 stand

rejected under 35 U.S.C. §103(a) as being unpatentable over Chelba in view of Ratnaparki; and claims 12 and 25 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Chelba in view of Lee and further in view of San Segundo et al., “Confidence Measures for Spoken Language Dialogue Systems”, 2001 (hereinafter San Segundo).

The Applicant respectfully disagrees with these rejections. The Applicant also notes that the cited article “Learning to Parse Natural Language with Maximum Entropy Models” was not provided in the PAIR system or otherwise. The Examiner is requested to kindly provide this article with the next correspondence.

Claims 2, 4, 6-7, 12-13, 15-16, 20, 22-23, 25-26, 28-29, 34, 36-37 and 39-40 depend from claims 1, 18 and 31 respectively, and are therefore also believed to be in condition for allowance for at least the stated reasons.

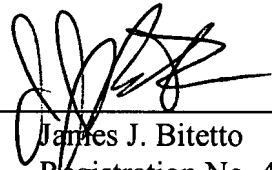
In view of the foregoing amendments and remarks, it is respectfully submitted that all the claims now pending in the application are in condition for allowance. Early and favorable reconsideration of the case is respectfully requested.

It is believed that no additional fees or charges are currently due. However, in the event that any additional fees or charges are required at this time in connection with the application, they may be charged to applicant's IBM Deposit Account No. 50-0510.

Respectfully submitted,

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By: _____



James J. Bitetto
Registration No. 40,513

Mailing Address:

KEUSEY, TUTUNJIAN & BITETTO, P.C.
20 Crossways Park North, Suite 210
Woodbury, NY 11797
Tel: (516) 496-3868
Fax: (516) 496-3869